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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Patent application of:

Applicant: Stefan Vilsmeier  
Serial No.: 10/083,041  
Filing date: February 26, 2002  
Title: NEURO-NAVIGATION SYSTEM  
Examiner: Francis J. Jaworski  
Art Unit: 3737  
Docket No. SCHWP0110USB

REPLY TO OFFICE ACTION DATED JANUARY 22, 2004

MS AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

RECEIVED  
MAY 03 2004  
TECHNOLOGY CENTER R3700

Sir:

Favorable reconsideration of the above-referenced application is respectfully requested in view of the following part(s) of this reply:

Amendments to the Claims

Remarks

Enclosures: ☐ Check in the amount of \$<>  
☐ Petition for Extension of Time  
☐ Information Disclosure Statement

In the event any fee or additional fee is due in connection with the filing of this paper, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988 (under the above Docket Number). In the event an extension of time is needed to make the filing of this paper timely and no separate petition is attached, please consider this a petition for the requisite extension and charge the fee to our Deposit Account No. 18-0988 (under the above Docket Number).

**Amendments to the Claims**

1-12. (cancelled)

12. (currently amended) A calibration process for mapping the angular and spacing positions of referencing cameras, comprising  
positioning a calibration tool having two reflectors secured at predetermined positions at a known distance away from each other in the viewing range of said cameras,  
moving said calibration tool three-dimensionally in said viewing range,  
mapping several intermediate positions of said calibration tool by said referencing cameras and converting the resulting data by means of a computer unit individually into three-dimensional coordinates of the reflectors or calibration tool, and  
computing ~~and memorizing~~ said angular and spacing positions of said cameras from said three-dimensional coordinates of said reflectors or calibration tool by means of said computer unit.

13. (previously presented) The process set forth in claim 12, further comprising projecting on a graphic display terminal a projected relative position of said reflectors during said three-dimensional movement of said calibration tool.

14. (previously presented) The process set forth in claim 12, wherein a pointer provided with said removable reflectors is used as said calibration tool.

15. (previously presented) The process set forth in claim 12, wherein a calibration rod provided with said removable reflectors is used as said calibration tool.

16. (cancelled)

17. (currently amended) In a control system for a surgical microscope, a microscope stand having a base, a microscope mounted to the stand for three-

dimensional movement, a source of infrared radiation, at least two mapping cameras, a computer unit connected to said cameras, a graphic display terminal connected to said computer unit, and at least three infrared radiation reflectors removably attached to said microscope in a characteristic arrangement; The control system set forth in claim 16; wherein said microscope has optics and has been calibrated by focusing the optics of said microscope on a point having known three-dimensional coordinates, and wherein focusing data has been transferred to said computer unit while said computer unit mapped the three-dimensional position of said microscope by means of said reflectors and said cameras.

18. (previously presented) The control system set forth in claim 17, wherein one or more of the following control sequences are implemented by the computer unit:

a) automatically tracking and focusing an instrument tip, the position of which is known to said computer unit via the use of infrared radiation reflectors and said cameras;

b) automatically focusing a memorized or predetermined point of operative treatment; and

c) focusing a point of operative treatment from various three-dimensional and angular positions of said microscope.

19-22. (cancelled)


23. (withdrawn) In an image-guided surgical system comprising at least one instrument that is tracked by a navigation system, a calibration device including a conical guide surface terminating at a central calibration point for locating a tip of the instrument at a known location in the navigation system.

**Conclusion**

In view of the foregoing, request is made for timely issuance of a notice of allowance.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP


By   
Don W. Bulson, Reg. No. 28,192

1621 Euclid Avenue  
Nineteenth Floor  
Cleveland, Ohio 44115  
(216) 621-1113

CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper or thing referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: MS AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: April 22, 2004

  
Don W. Bulson

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